Western Regional Research Center

The dynamics of human pathogen colonization of produce.

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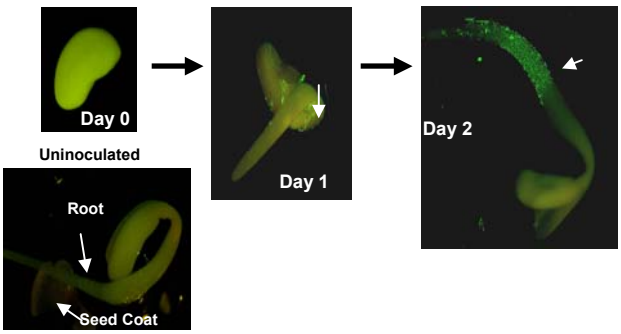
Wrinkled alfalfa seeds harbor more bacteria than smooth alfalfa seeds, including human pathogens and are more difficult to chemically sanitize. Removal of these seeds from an alfalfa seed lot reduces the number of bacteria in the seed lot and may increase the safety of the seeds used for sprouting.

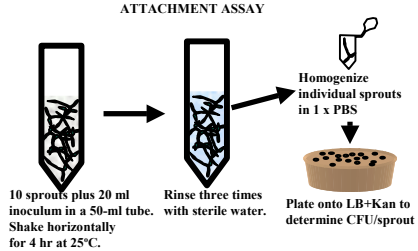


***Salmonella enterica* multiplies on sprouting alfalfa seeds. Alfalfa seeds were inoculated with a fluorescent green *S. enterica* strain. The alfalfa seeds are slightly fluorescent at day 0 and few bacteria are present (approximately 10-100 per seed), so the bacteria are not visible. After one day of seed sprouting, the *S. enterica* bacteria have multiplied to approximately 50,000 per sprout and they are visible on the alfalfa seed coat edges. By the second day of sprouting, the *S. enterica* have have multiplied to over 1,000,000 per sprout and they have colonized the alfalfa root.**

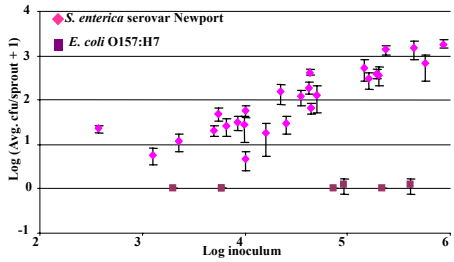
CONCLUSIONS

- ***S. enterica* attached better to sprouts than *E. coli* O157:H7.**
- ***S. enterica* attached to sprouts as well as or better than plant-associated species.**
- ***E. coli* serovars differed in attachment to sprouts.**
- **Non-pathogenic *E. coli* strains may not serve as appropriate proxy strains for *E. coli* O157:H7**

ATTACHMENT ASSAY

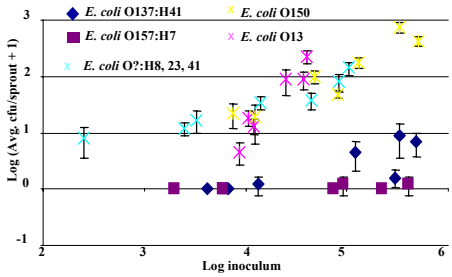


S. ENTERICA ATTACHED BETTER TO SPROUTS THAN *E. COLI O157:H7*



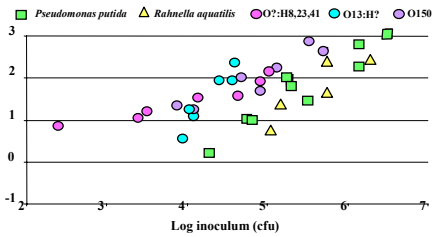
Attachment assays on 3-day-old alfalfa sprouts revealed that at a given inoculum, 1 to 3 logs higher populations of *S. enterica* cells attach than *E. coli* O157:H7

E. COLI SEROVARS DIFFERED IN ATTACHMENT TO SPROUTS



There was no significant difference in attachment among *S. enterica* serovars; however, there were significant differences between attachment of *E. coli* serotypes. Four *E. coli* serotypes, recovered from cabbage roots following a sewage spill, varied in their ability to attach to sprouts.

SIMILAR ATTACHMENT TO SPROUTS BY *E. COLI* AND PLANT-ASSOICATED BACTERIA



Attached populations of some *E. coli* serotypes were similar to populations of plant associated bacteria at all inoculum tested.